INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Frequently Asked Questions (FAQs) on Land Application Management Practices

Office of Land Quality

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1. When do I need to submit a new permit and how long is it good for?

Permit applications must be submitted 180 days prior to the proposed commencement of land application (327 IAC 6.1-3-1). Renewals must also be submitted 180 days prior to the expiration of the current permit. Land application permits are good for 5 years and renewable for up to 10 years in most cases.

2. How many soil samples do I need?

Soil samples must be collected as 1 representative composite sample per every 25 acres or a fraction thereof within the application site. Soil analyses are valid only if they were conducted no more than 2 years prior to the date of land application.

3. When do I need to apply lime to my field?

Lime needs to be applied to a field when the soil pH is 5.5 standard units or less. Lime application must be documented.

4. How do I calculate Plant Available Nitrogen?

The following formulas for PAN loading calculations apply and must be used to calculate the amount of PAN in the biosolid or industrial waste product, and the residual available nitrogen at the application site; all calculations are based on a percent dry weight basis:

(1) %Total N = %Total Kjeldahl N + %Nitrate N
(2) %Organic N = %Total N - (%Ammonia N + %Nitrate N)
(3) Pounds Organic N per dry ton of industrial waste product or biosolid, except anaerobically digested biosolid, available during year of application = %Organic N × 6
(4) Pounds Organic N per dry ton of anaerobically digested biosolid available during year of application = %Organic N × 4
(5) Pounds of Ammonia N per dry ton = %Ammonia N × 20
(6) Pounds of Nitrate N per dry ton = %Nitrate N × 20
(7) Pounds PAN per dry ton = Pounds of Organic N per dry ton + Pounds of Ammonia N per dry ton + Pounds of Nitrate N per dry ton
(8) Residual nitrogen from past biosolid or industrial waste product applications:

(A) Pounds of residual N from industrial waste product or biosolid, except anaerobically digested biosolid, available one (1) year after application = %Organic N × 3 × dry tons applied per acre
(B) Pounds of residual N from anaerobically digested biosolid available one (1) year after application = %Organic N × 2 × dry tons applied per acre
(C) Pounds of residual N from industrial waste product or biosolid, except anaerobically digested biosolid, available two (2) years after application = %Organic N × 1.6 × dry tons applied per acre
(D) Pounds of residual N from anaerobically digested biosolid available two (2) years after application = %Organic N × dry tons applied per acre
(E) Pounds of residual N from industrial waste product or biosolid, except anaerobically digested biosolid, available three (3) years after application = %Organic N × 0.8 × dry tons applied per acre

(F) Pounds of residual N from anaerobically digested biosolid available three (3) years after application = %Organic N × 0.5 × dry tons applied per acre where: N = Nitrogen

5. What is stockpiling ?

"Stockpiling" means the temporary placement of a dewatered biosolid or industrial waste product in a pile for more than twenty-four (24) hours but less than six (6) months at the land application site in accordance with an approved management plan (327 IAC 6.1-2-54).

6. What are the pollutant ceiling limits?

Maximum concentration of heavy metals allowed in biosolids and industrial waste products to participate in any recycling program under 327 IAC 6.1.

POLLUTANT	mg/kg DRY WEIGHT BASIS
ARSENIC	75
CADMIUM	85
COPPER	4,300
LEAD	840
MERCURY	57
MOLYBDENUM	75
NICKEL	420
SELENIUM	100
ZINC	7,500

7. What are the exceptional quality table limits?

Maximum concentration of heavy metals in biosolids and industrial waste products to participate in the marketing and distribution, nonsite-specific and hybrid land application recycling programs under 327 IAC 6.1.

POLLUTANT	mg/kg DRY WEIGHT BASIS
ARSENIC	41
CADMIUM	39
COPPER	1,500
LEAD	300
MERCURY	17
MOLYBDENUM	75
NICKEL	420
SELENIUM	100
ZINC	2,800

8. What are the maximum annual pollutant loading rates?

Maximum annual pollutant loading rates, expressed as pounds of metal per acre per year, are the amount of metal allowed to be applied annually leased in EPA's risk evaluations. Annual loading rates of biosolids and industrial waste products must not result in any of the following pollutant loading rates being exceeded.

POLLUTANT	ANNUAL POLLUTANT LOADING RATE (pounds per acre per 365-day period)
ARSENIC	1.8
CADMIUM	0.45
COPPER	66.0

LEAD	13.4
MERCURY	0.7
MOLYBDENUM	Not applicable
NICKEL	18.7
SELENIUM	4.4
ZINC	124.9

9. What are the cumulative pollutant loading rates?

Cumulative pollutant loading rates, expressed in pounds of metal per acre, are the maximum lifetime loadings allowed before an application site can no longer be used for application. The permittee must notify the commissioner of the cumulative application on a land application site of any metal in a quantity equal to or greater than 90% of the following:

POLLUTANT	CUMULATIVE POLLUTANT LOADING RATE (pounds per acre)
ARSENIC	36
CADMIUM	34
COPPER	1338
LEAD	267
MERCURY	15
MOLYBDENUM	Not applicable
NICKEL	374
SELENIUM	89
ZINC	2499

10. What are crop application rates?

Crop application rates refer to the rate of application of Plant Available Nitrogen (PAN) that balances nitrogen application with the crops nitrogen requirements to avoid excessive nitrogen levels in the soil that could lead to contamination of ground water. Crop application rates based on PAN loadings, using the table below, must not exceed the following:

CROP	POUNDS OF PAN PER ACRE
CORN	200
SOYBEANS	100
HAY / PASTURE	100
CEREAL GRAIN	100
SET ASIDE / IDLE	50

The nitrogen application rate for the proposed crop to be grown on the land application site must also be adjusted to account for application of fertilizers, manure, and the presence of residual available nitrogen in the soil from previous applications of a biosolid, industrial waste product, or pollutant-bearing water.